Minutes, 3/18/04 Tevatron BPM Upgrade Meeting
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The agenda as announced consisted of:

1. Timing/diagnostics system and crate layout. Bill/Mark
2. Further analysis of proton scan data. Rob
3. AOB.

1. The transparencies shown are found in Accelerator Division document database #1082.

Mark Bowden and Bill Haynes made a detailed presentation of many issues relevant to the crate layout and timing system. Many of the details can be found in the transparencies. I will summarize some of the highlights here.

- There has been new thinking about the crate layout, how the signal cables are brought to the crate, connector types, what kind of cables to use to move the signals around within the crate, etc.

- smb connectors were shown. The decision is to go with smb. They are more compact than sma, make good connections, and so should be suitable.

- The RG8 cables are too big to just plug into the crate. And they are not necessarily close enough. Some sort of conversion to thinner cables and smb connectors will be made away from the rack.

- Rather than bringing in the signal cables to the back of the crate a design was shown that brings the signal cables to the front. The smb connectors allow enough connections on the transition cards to allow this. Cables will run vertically from above and/or below to the transition cards. The filtered or diagnostic signal will move from the output of the card to the EchoTek card next to it on a small jumper (probably smb to smb).

- We will ask EchoTek to put smb connectors on the new boards.

- The VME crates will now look like "normal" VME crates in that they will have a full backplane, etc. The conclusion and action item is that the specification for the crate will be updated and provided to the

purchasing department and the requisition will be released for bid. Vince's group will take care of this.

- Bill Haynes showed some drawings of what the crates will look like with all the cables attached and he brought various examples of cables and connectors to show. Sample cable will be procured and tested before we make final decisions.

- We discussed the question of p and pbar cables and the pattern we should use to plug them in to the EchoTek cards. It was agreed that we should have a template and stick to it whenever possible to reduce confusion and reduce mistakes. Everything should be labelled. Deviations from the normal connection pattern are allowed.

- Bill Haynes then talked about the timing module. He has measured 65ps jitter rms in A1. The jitter from the EchoTek clock module is about 15ps. The candidate clock is from Conner-Winfield and Bill sees a jitter of 3ps. For the TeV BPM system we would choose 7/5 of the RF frequency for this clock.

- Bill showed a clock fan-out system. See the slides for details.

- The plan is to mock up some of this and test it.

2. Further Analysis of proton scan data. Rob K.

- The previous discussion was quite long so the proton scan data analysis was shortened. Most of the details and plots can be found in the memo Rob wrote: AD doc #1076 and 1080.

- Rob showed that the proton cancellation was much better on the vertical than the horizontal BPM and there is a small offset from 0. He is still investigating these effects.

- Rob showed that the effect of this residual signal on the pbar pickups from the protons is less than a couple of hundred microns on the absolute measurement of pbar location. This is better than the requirements. The stability of the pbar measurement will be substantially better -- on the order of 10 microns or so, if I understand Rob correctly.

3. AOB.